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# (54) Metal wristwatch strap

(57) A wristwatch strap comprises an elongated flexible core member (11) and holding or wrapping means (1) wound about the core member (11) with adjacent turns of the holding means in close contact with each other, and having the surface formed with a design pattern.

FIG.6

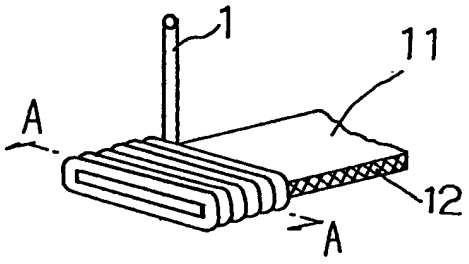


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FIG.1

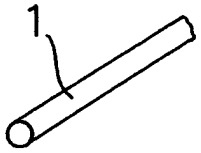


FIG.3

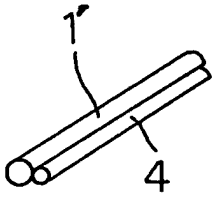


FIG.2

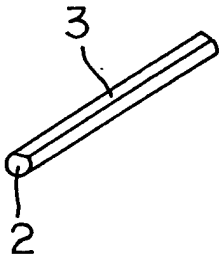


FIG. 4

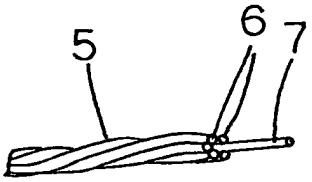


FIG. 5

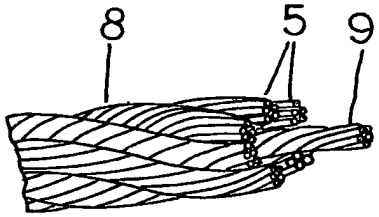


FIG.6

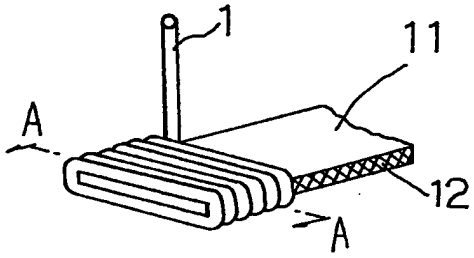


FIG.7

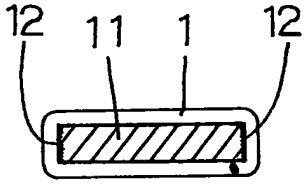


FIG.8

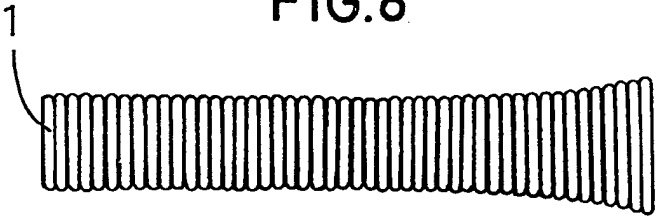

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FIG.9

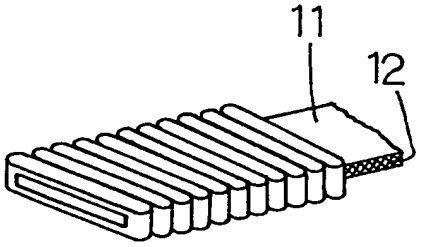



FIG.10

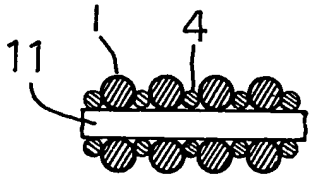



FIG.11

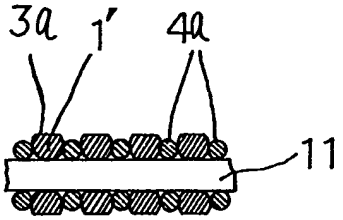



FIG.12

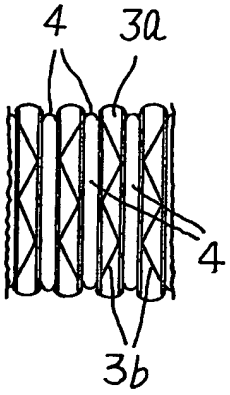
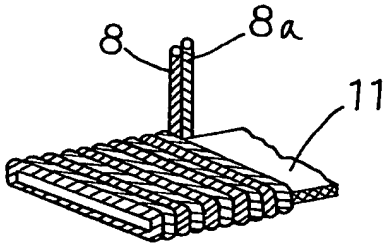



FIG.13



SPECIFICATION

**Metal wristwatch strap**

This invention relates to metal wristwatch straps.

There have been proposed, and practically employed, a wide variety of wristwatch straps which have been designed for specific purposes.

Of late, there have been increasing demands for wristwatch straps which are thin and have aesthetic and three-dimensional appearances and are of apparent high quality. One known metal wristwatch strap is of the inner core (mesh) pass type in which metal pieces are clad on an inner core (mesh) substantially at right angles to the longitudinal axis of the core by passing the metal pieces through openings in the core. Another is the helical type in which a strip of sheet metal is helically wound about a core, and yet another is the spot inner core type in which metal pieces are spot welded to opposite surfaces of a core. Finally, there is the capped mesh type of wristwatch strap in which metal pieces are capped on a core.

In the fabrication of any one of the abovementioned conventional wristwatch straps, the metal sheet or pieces are clad on the core and then impressed on the outer surface thereof with a design pattern by means of pressing. However, with this process the design pattern impressed on the strap surface lacks in variety. In order to provide wristwatch straps having the surfaces impressed with a wide variety of design patterns, it is necessary to provide a wide variety of materials which means that a wide variety of straps have to be produced in a relatively small number resulting in increased production costs. In addition, when the metal sheet or pieces are to be clad on the core, there is the possibility that the sharp ends of the metal sheet or pieces may damage the cuff of the wearer's apparel.

Thus, the present invention has been developed to eliminate the drawbacks inherent in the conventional wristwatch straps.

According to the present invention there is provided a wristwatch strap comprising a flexible, elongated core member of a predetermined length, and flexible holding or wrapping means of a longer length wound about the core member with adjacent turns of the holding means in close contact with each other, the surface of the strap being formed with a design pattern by pressing.

Thus the present invention provides a wristwatch strap produced by winding a flexible holding or wrapping means of a predetermined length about a flexible core member of a shorter length, with adjacent turns of the holding means in close contact with each other, and then pressing the holding means on the surface thereof, whereby the design pattern to be imparted to the strap surface can be simply varied by selecting the material of the holding means, the combination of such materials, the winding manner of the materials, and the force applied in the pressing operation.

The above and other objects and attendant advantages of the present invention will be more readily apparent to those skilled in the art from a reading of the following detailed description in conjunction with the accompanying drawings which show, by way of example, several embodiments of wristwatch strap constructed in accordance with the principle of the present invention and in which:—

Figures 1 to 5 are respective perspective views of portions of five different embodiments of the present invention;

Figure 6 is a fragmentary perspective view of the first embodiment at an initial processing step in the fabrication of the strap,

Figure 7 is a cross-sectional view taken along the line A—A of Figure 6;

Figure 8 is a plan view of the first embodiment at an advanced stage in the fabrication thereof;

Figure 9 is a fragmentary perspective view of the first embodiment after the completion of the final processing or pressing step in the fabrication of the strap;

Figure 10 is a partial cross-sectional view on an enlarged scale of the partially formed second embodiment;

Figure 11 is a partial cross-sectional view of the second embodiment of Figure 10 after completion of the final processing or pressing step;

Figure 12 is a fragmentary plan view of the second embodiment of Figure 11 showing an additional design pattern impressed on the surface thereof; and

Figure 13 is a fragmentary perspective view of the third embodiment at an initial step in the fabrication thereof.

The present invention will now be described with reference to the accompanying drawings and more particularly, to Figures 1 to 7, inclusive. Figure 1 shows a portion of the first embodiment of the invention in which flexible holding or wrapping means comprises a predetermined length of a wire member 1 having a circular cross-section. Figure 2 shows a portion of the second embodiment in which the flexible holding or wrapping means comprises a predetermined length of a wire member 2 having a substantially circular cross-section but with a flat portion 3 extending along the entire length thereof. In the third embodiment of Figure 3, the flexible holding or wrapping means comprises the wire member 1' of Figure 1 and an additional wire member 4 disposed in side-by-side relationship thereto and having a circular cross-section, the diameter of the wire member 4 being smaller than that of the member 1.

The flexible holding or wrapping means of Figure 4 comprises a multi-wire strand 5 formed by twisting a plurality of wire elements 6 about a core wire member 7. The wire elements 6 and core wire member 7 have the same diameter which is substantially smaller than that of the additional wire member 4 of Figure 3. Figure 5 shows the fifth embodiment as comprising flexible holding or wrapping means in the form of a multi-wire strand assembly 8 formed by twisting a plurality of the wire strands 5 of Figure 4 about a core wire means 9 which again, may comprise the multi-wire strand 5 of Figure 4. However, the core wire means 9 may be a single wire member without departing from the

scope of the present invention. The core wire strand 9 may be the commonly known lay or Lang's lay. The material of the wire members 1, 2 and 4, the core wire member 7 and the wire element or elements of the core wire 9 may be spring stainless steel wire, non-ferrous metal wire, rare metal wire of the like.

Turning now to Figures 6 and 7, the reference numeral 11 denotes an elongated flexible core member of rectangular cross-section formed by knitting a plurality of metal pieces in a network and having a length less than the holding or wrapping means 1. In many cases, the core member 11 has the opposed rough side faces 12 as cut.

The fabrication of a first embodiment of wristwatch strap will now be described in connection with the use of the wire member 1 as the holding or wrapping means. One end of the wire member 1 is secured to the underside of one end of the core member 11 in a suitable, conventional manner and the wire member 1 is then wound about the core member 1 from said one end to the other end of the core member, with the adjacent turns of the wire member being maintained in close contact with each other as shown in Figure 6. After the entire wire member 1 has been wound about the core member 11 (see Figure 8), the other end of the wire member 1 is secured to the underside of the strap and the latter then pressed by suitable means, such as a press, whereby the top and bottom surfaces of the turns of the wound wire member 1 are flattened (as seen in Figure 9). In this case, since the wire member 1 is continuous and usually impressed with a design pattern on the peripheral surface thereof, the design pattern remains uninterrupted on the upper surface and side surfaces of the turns even after the wire member has been wound and pressed, thereby to give a pleasant external appearance to the completed wristwatch strap. In addition, since the ends of the wire member 1 are not present on the sides of the completed strap, there is no possibility that the wire member ends will damage the wearer's wrist and/or his apparel cuff. Furthermore, since the side faces 12 of the core member 11 are rough, the turns of the wound wire member 1 bite into these faces, whereby the wire member turns are prevented from slipping along the core member 11 and thus the wire member is positively held on the core member.

When the wire member turns are pressed or flattened by the press, or the like, after the wire member 1 has been wound about the core member 11, concaves and convexes in a desired design pattern (not shown) may be simultaneously provided on the surface. Alternatively, the concaves and convexes may be formed after the pressing step if desired. In such a case, in order that the wire member turns will not loosen and/or body hairs of the wearer will not be caught inbetween adjacent turns of the wire member 1, the wire member is required to be tightly wound with adjacent turns of the wire member in close contact with each other. For this purpose, after the winding of the wire member 1 about the core member 11, the upper and bottom surfaces of the wire member turns (as seen in Figure 6) are extended or flattened in a direction right angles to the longitudinal axis of the core member 11, whereby the adjacent wire member turns firmly contact each other with no clearance left therebetween.

In the fabrication of a wristwatch strap using the multi-wire strand assembly 8 of the fifth embodiment of holding or wrapping means of Figure 5, when the strand assembly wound about the core member 11 is pressed flat, the twisting pattern of the individual strands 5 of the assembly 8 itself presents a design pattern, but it is also possible to provide concaves and convexes in a desired pattern on the strand assembly if desired.

The fabrication of the second embodiment of wristwatch strap will be now described referring to Figures 10 to 12, inclusive. In the fabrication of this embodiment, the wire member 1 and the smaller diameter wire member 4 are wound in side-by-side relationship about the core member 11, as shown in Figure 10, and then pressed from above and below to form upper and lower flattened surfaces 3a on the wire member turns, leaving the remaining portions of the turns of the wire member and the turns of the smaller diameter wire member 4 unflattened. Since the flattened surface 3a on the wire member 1 and the unflattened smaller diameter wire member turns are alternately disposed, the incoming light is reflected in different design patterns by the flattened surfaces 3a, the unflattened sectors of the turns of the wire member 1', and the unflattened sectors of the turns of the wire member 4. In this case, by varying the pressing force applied to the wire member 1', the area of the flattened surfaces 3a can be varied, thereby to vary the pattern of the design to be provided on the strap. In addition, at the time of the pressing step, or at a different time, a specific design mould may be employed to impress a design pattern 3b on the flattened surface 3a of the wire member 1' (see Figure 12). Also in this embodiment, when the wire member 1' is pressed in a direction at right angles to the longitudinal axis of the core member 11 to extend the wire member in such a direction, the adjacent turns of the wire member are more positively pressed against each other.

The fabrication of the third embodiment of wristwatch strap will be now described referring to Figure 13. Two wire strand assemblies, one of which is the wire strand 8 of the Figure 5 and the other of which is a strand assembly 8a different from the assembly 8 with respect to the twisting pattern, are wound side-by-side about the core member 11 and then pressed by a press or the like, whereby the difference in twisting pattern itself gives a design pattern to the surface of the turns of the strand assemblies.

The wire strand assembly used herein is a wire strand which has a very high tensile strength and is formed by twisting together a plurality of small diameter steel, or other metal, wires. The diameter of the individual wires is less than 3 mm. The wires in the wire strand assemblies are closely twisted together and accordingly, there is no possibility that body hairs on the wrist of the wearer will be caught inbetween the adjacent ropes or strand assemblies.

As mentioned hereinabove in connection with specific embodiments of wristwatch straps, according to the present invention a predetermined length of flexible holding or wrapping means is wound about a shorter length of flexible core member and then pressed on the outer surface thereof partially to flatten the surface, thereby to cause adjacent turns of the holding means closely to contact each other. Therefore, by varying the combination of the holding means, the pressing force applied, the type of wire forming the holding means, and the winding the holding means about the core member at an angle other than right angles with respect to the longitudinal axis of the core member, the design pattern imparted to the outer surface of the holding means is readily and simply varied without increase in production costs. Furthermore, the concave and convex pattern on the sides of the wristwatch strap provided by the turns of the holding means gives a three-dimensional and attractive appearance to the strap. Thus, the present invention provides wristwatch straps which have a high commercial value.

CLAIMS

1. A metal wristwatch strap comprising a flexible elongated core member of a predetermined length, and flexible holding or wrapping means of a longer length wound about the core member with adjacent turns of the holding means in close contact with each other, the surface of the strap being formed with a design pattern.

2. A strap according to Claim 1, wherein the design pattern on the surface of the holding means is formed by a press.

3. A strap according to claim 1 or 2, wherein the holding means comprises a single flexible wire member of circular cross-section.

4. A strap according to claim 1 or 2, wherein the holding means comprises a flexible wire rope consisting of a plurality of small diameter wire elements twisted together.

5. A strap according to claim 1 or 2, wherein the holding means comprises a combination of wire members of different diameters.

6. A strap according to Claim 5, wherein only the wire member of larger or largest diameter has a partially flattened surface formed by pressing.

7. A strap according to any of the preceding claims, wherein the design pattern formed on the surface of the strap is formed simultaneously with, or at a time different time from, the pressing operation.

8. A metal wristwatch strap substantially as herein particularly described with reference to Figures 1, 6, 7, 8 and 9, or to Figures 2, 10, 11 and 12, or to Figures 3 and 13, or to Figure 4, or to Figure 5 of the accompanying drawings.

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